

Sustainable Management of Ecosystem in Sub-tropical Islands--A Case Study of Ogasawara Islands, Japan

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Sustainable Management of Ecosystem in Sub-tropical Islands

— A Case Study of Ogasawara Islands, Japan —

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Abstract

Ogasawara Islands locate approximately 1,000km south of Tokyo metropolitan area, almost same distance between Galapagos and mainland of Ecuador where are popularly known under the name of the Galapagos of the Orient especially to Japanese people due mainly to their richness of indigenous and rare species of fauna and flora within limited small islands area. Under the sub-tropical climate in Ogasawara, annual average temperature 23°C, average of the highest-temperature in the warmest month of August 30°C, and average of the lowest-temperature in the coldest month of February 15°C which climatic conditions are close to tropical areas rather than Tokyo metropolis. Ogasawara National Park was designated in 1972 covering 61km², about 59% of total 104km² of Ogasawara Islands among which 50km² (82%) overlapped with national forests and other 18% is under the private land ownership. Approximately 41% of National Park area, 25km² covers most stringent Special Protection Zone. These figures indicate that Ogasawara Islands are typical examples of islands of National Park in Japan.

New Development Plan of Ogasawara Islands in 1999 aims at industrial development and preparation of social bases in making use of natural characteristics and growth potentialities of the Islands. The Plan expected population of the Islands approximately 2,500 among which almost 97% has been attained very recently. However population ratio of more than 65 years old reached 9.9%, this figure is rather small compared with the other regions or 17.2%, general average of Japan in 2000, since younger and production aged generations has immigrated still in Ogasawara Islands. Maximum population of 7,462 in Ogasawara was recorded in 1940 due mainly to immigration from mainland for fisheries and whaling. In

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reflecting the history of pioneering settlers, male population has consistently been dominated over female population, and even in the year 2000 male is 372 persons larger than female population even though the industrial structure in Ogasawara has been shifting from primary to tertiary industry with ecotour-oriented tourism, in other words from “whaling to whale-watching economy”.

As a socio-economic infrastructure, there exists very strong demand for airport construction in Ogasawara Islands by local inhabitants for the reasons of medical affairs of emergency and tourism promotion by increasing number of visitors — around 20,000 per a year as well. At the same time, NPO/NGOs groups and other environmentalists in and outside of the Islands have strong opposition against any plan of airport construction in Ogasawara Islands for the reason of protecting the indigenous ecosystems of Galapagos of the Orient through maintaining of rather inconvenient transportation system — vessels, one way 25 hours from Tokyo metropolis. In the meantime, Ogasawara Marine Transportation Co. Ltd. plans to introduce super-speed vessel — Techno-Super-Liner (TSL), saving one-third of navigation hours in fiscal 2005 which may perhaps entail positive effects on ecosystems sustainability, economy and social structure of Ogasawara Islands.

In learning from Galapagos National Park of Ecuador, the Tokyo Metropolitan Government, in cooperation with national and other institutions of Japan, has a plan of introducing institutional system of interpretive guides for Minamijima Island and Sekimon area of Hahajima Island for ecotourism sites which includes following items.

- (1) Visitors Education ; Through introducing appropriate interpretive activities on fauna and flora especially, let visitors to notify the valuables and attractions of Ogasawara, and to bring about visitors conservation awareness which may finally entail to produce repeating visitors to Ogasawara Islands.
- (2) Guides Training ; Training and qualifying interpretive guides by lecture classes of nature, guiding skills as well as of risk management and survival practices, etc.
- (3) Villagers lecturing ; Lecture classes for local villagers to issue qualifications will be conducted during the off-season of October to November, and follow-up lectures are also planned continuously.

Key words : ecotourism, Galapagos National Park, Ogasawara National Park, sustainable management, whale-watching

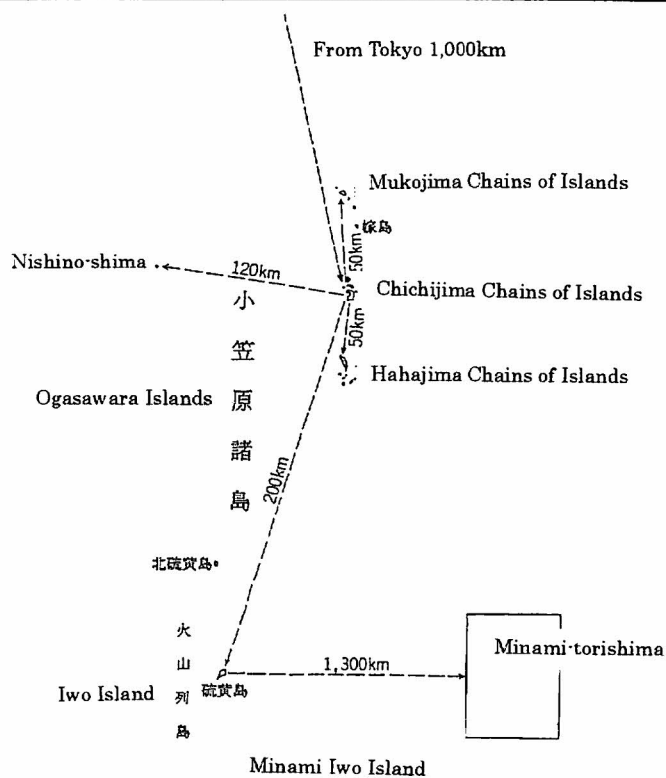
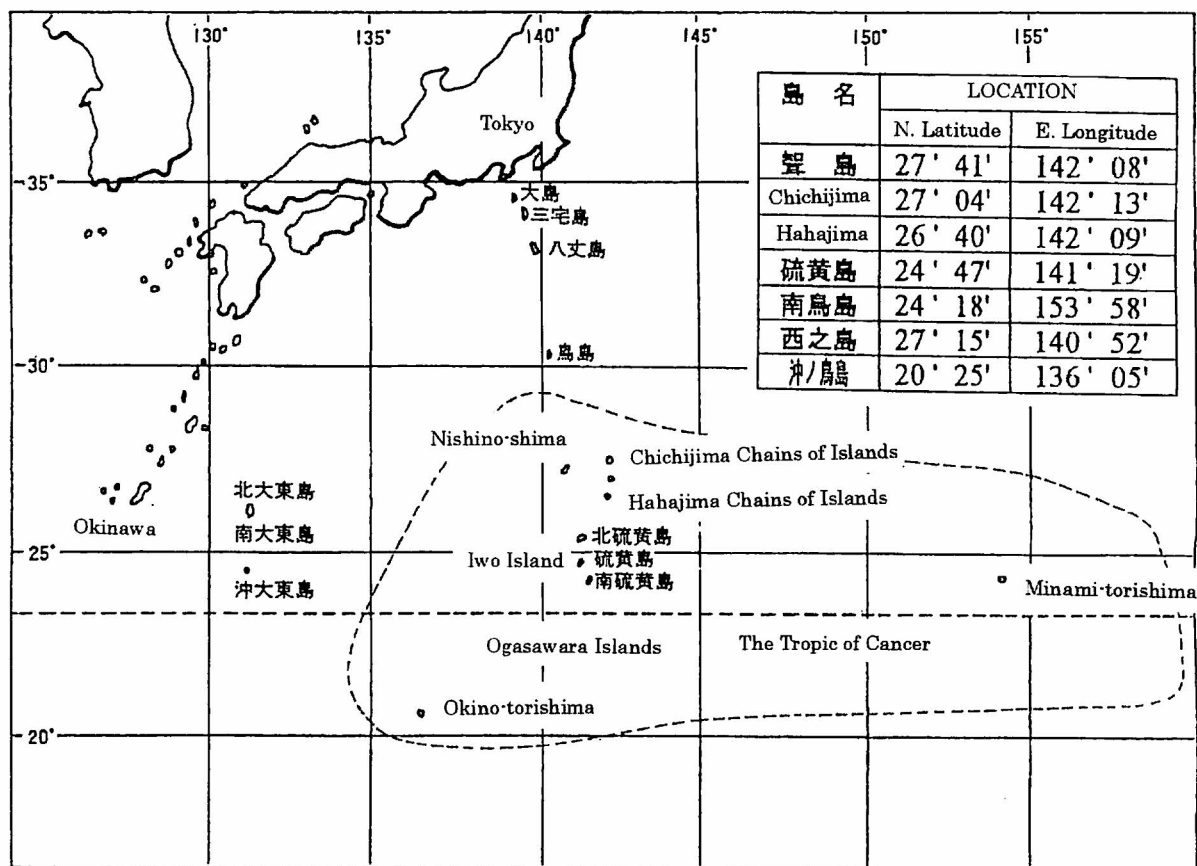
Introduction

This study report is a comparative study for sustainable management of natural and socio-economic ecosystems mainly focusing on ecotourism development in Ogasawara Islands of Japan, popularly known as the name of “Galapagos of the Orient” in comparison to that of Galapagos Islands in Ecuador, both of which are ones of original sites for ecotourism in Japan and also in the world, which study report is based upon the field surveys and interviews of relevant authorities in Ogasawara Islands by the author in 2001 and their follow-up data collection. The sub-title of this study report is therefore to be “whaling to whale-watching economy”, part of which report was presented to the joint workshop based upon the Memorandum of Understanding (MOU) for Exchanging Program between Nankai University, China and Toyo University, Japan in September 2003, and another part of which report was also introduced to the 3rd International Conference of Bornean Biodiversity & Ecosystems Conservation (BBEC) Programme in Sabah, Indonesia, entitled “Biodiversity Conservation as a Way of Life”, in February 2005 co-hosted by Japan International Cooperation Agency (JICA), Sabah State Government Agency and University Malaysia Sabah. This study report is also based upon the author’s study report, entitled “Environmental Education and Ecotourism for Conservation towards Sustainability of Local Communities” carried in Journal of Tourism Studies Vol.3, March 2004 published by the Faculty of Regional Development Studies, Toyo University¹⁵⁾.

1. Islands of National Park, the Galapagos of the Orient

Ogasawara Islands consist of Tertiary sediments from submarine volcanoes (Mukojima, Chichijima and Hahajima chains of islands), alluvial volcanoes (Iwo chain of islands) and three isolated islands which are Nishinoshima, Minamitorishima and Okino-torishima contributing to secure 200-mile economic zone of Japan. These islands are scattered about vast area of sub-tropical region extended 1,800km east and west and 1,000km north and south in the North-western Pacific Ocean. There exist at present human settlements in only two islands, i.e. Chichijima and Hahajima, approximately 1,000km south of Tokyo metropolitan area, almost same distance between Galapagos and mainland of Ecuador. Ogasawara Islands are popularly known under the name of the Galapagos of the Orient due

LOCATION MAP OF OGASAWARA ISLANDS



mainly to their richness of indigenous and rare species of fauna and flora.

Under the sub-tropical climate in Ogasawara, annual average temperature is 23°C, average highest-temperature in warmest month of August is 30°C, and average lowest-temperature in coldest month of February is 15°C, very close to tropical standard of more than 18°C of average lowest-temperature in coldest month. By the way in Tokyo, 31°C average highest-temperature of August is higher than Ogasawara, but 2°C average lowest-temperature of February shows a large difference from that of Ogasawara Islands.

The Government of Japan officially declared the Ogasawara Islands were in its territory in 1875 within the jurisdiction of Ministry of the Interior which was recognized and accepted internationally. Until compulsory removal of 6,886 inhabitants to the main land due to the 2nd World War in 1944, administration of Ogasawara Islands was entrusted to Governor of Tokyo Metropolis, and was then transferred to Ogasawara Forestry Office of Ministry of Agriculture & Commerce. Under the Forestry Operation Plan since 1925, such economically useful tree species as Ryukyu Pine-tree from Okinawa, Common Ru or Mokumaou (*Casuarina equisetifolia* L.) from Australia and Akagi (*Bischofia javanica* BL.) from South-east Asia were introduced in order to self-sufficing of fuel woods in Ogasawara Islands which cynically became target species of invasive alien ones being harmful to indigenous ecosystems recently.

Taking the opportunity of returning Ogasawara Islands from the USA to Japan in 1968, the Government of Japan opened Ogasawara General Administrative Office which included administration of national forests covering 66km², approximately 63% of total area of Ogasawara Islands. Ogasawara National Park was then designated in 1972 covering 61km², about 59% of total 104km² of Ogasawara Islands among which 50km² (82%) overlapped national forests and other 18% is under the private land ownership. Approximately 40% of National Park area, 24.8km² covers most stringent Special Protection Zone⁴⁾. However no national park ranger was dispatched so far to stay in the Islands for management tasks which have been entrusted to the limited number of officers in the branch office of Tokyo Metropolitan Government.

Wildlife Protection Area also covers 50km², and its Special Protection Zone is 9km². Entire area of Minami-Iwo Island, 3.7km² is designated as Wilderness Area and also as Natural Monument.

Table 1 National Park area in Ogasawara Islands (km²)

Zones in National Park	Special Protection	Class I Special Z.	Class II Special Z.	Class III Special Z.	Ordinary Zone	TOTAL
Area covered	24.8 40.7%	10.2 16.7%	20.4 33.5%	2.4 3.9%	3.2 5.2%	61.0km ² 100%

Source : Nature Conservation Bureau, the Ministry of the Environment⁷⁾

Galapagos ; In 1959, designated 6,937km² as National Park = 88% of total land area.

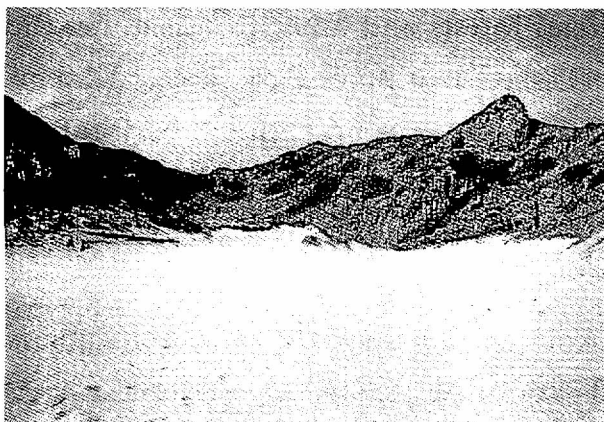
- 1) Zona de Restringida 8%
- 2) Zona de Primitive, major part of N.P. 79%
- 3) Zona de Visitants
- 4) Zona de Uso Especial, already affected by residents & alien species.
- 5) Zona Colonizada, outside of N.P. with human settlement & agriculture, 12%.

Relatively small areas of Zona Colonizada are surrounded by vast N.P. area.

2. High Percentage of Indigenous Species in Ogasawara Islands

There exist many indigenous species of plant in and around Mt. Chibusa-yama of Hahajima Island, the highest peak of Ogasawara Islands, 462m above sea level where visitors can easily to encounter Meguro (*Apaloptelon familiare*), native avian species and designated as Special Natural Monument.

In addition to Meguro, Akagashira-Karasubato (red-headed Columba species) and Ogasawara Buzzard are extremely rare which relative species can not be found in elsewhere of the world so far. Abundant indigenous species of fauna with the name of Ogasawara can be found like Ogasawara Flying Fox, Ogasawara Dragonfly, Ogasawara Damselfly, Ogasawara Cicada, Ogasawara Diving Beetle, Ogasawara Water Strider, etc. are designated as Natural Monuments. Land Hermit Crab and land snail species of all 11 families are also designated as Natural Monuments.



View of Minamijima Island, 1km south-west of Chichijima Island



View of southern part of Hahajima Island, palm tree forest

With regard to flora, Helanaren, tree-forming species of the Compositae can be found along the trail of Chibusa-yama. As indicated in the following Table 2, number of indigenous plant species in Chichijima and Hahajima chains of islands occupies 46%, almost half number of plant species among natural growth there.

Table 2 Percentages of Indigenous Plant Species in Chichijima and Hahajima chains of islands

	Species Number of Natural Growth	Indigenous Species Number	Percentage of Indigenousness (%)
Fern species	67	26	39%
Herbaceous plant species	130	41	32%
Tree species	112	76	68%
TOTAL	309	143	46%

Note : Summed up the data from Tokyo Forestry Office, 1995¹⁰⁾

Galapagos ; High endemic rates in Island of “On the Origin of Species”

- 1) Terrestrial fauna (only excepting marine avifauna), 75%
- 2) Mammals (only excepting 2 sea lion species), 92%
- 3) Reptiles (only excepting 2 sea turtle species), 97%.

3. Attractions and related Facilities for Visitors to Ogasawara

Since there exists no service of commercial air flight nor airport in Ogasawara Islands, visitors should travel by vessel of Ogasawara Marine Transportation Co. Ltd. plying between Tokyo Metropolis and Ogasawara Islands once about a week. Long journey of one way 25 hours would amplify attractions for visitors in the far-off time-distance even within the territory of Japan.

Whale watching is the most valuable resources of ecotourism in Ogasawara Islands where the Ogasawara Whale Watching Association was established. Humpback whale is the most common species, called as singing whale who come near the islands from December to May for breeding. Their delivery season is February to March. Diving after they raise their caudal tail fin, spouting water and jumping performance of 15m body length provide ecotourists whale therapy and healings.

Ogasawara Village has a Visitors Center in Chichijima as a comprehensive interpretive facility on history and nature of Ogasawara Islands by using models and photo-panels including restored canoe of sailing period. The Visitors Center was established by the Tokyo Metropolitan Government with subsidies from the

Ministry of the Environment⁴⁾. Ogasawara Fisheries Center in Chichijima established and run by the Tokyo Metropolitan Government is a fisheries experiment facility including artificial incubation of horse mackerel which observation building is opened to the public as an aquarium. Ogasawara Sub-tropical Agricultural Center in Chichijima established by the Tokyo Metropolitan Government is an agricultural research facility with blooming hibiscus and bougainvillea in profusion which exhibition garden collecting more than 110 species of tropical plants and indigenous species is also opened to the public for freely visit. There exists a large papal tree in the Center where Ogasawara Flying Foxes gather together. Sea Turtle Nursery in Hahajima was established by the Tokyo Metropolitan Government. Above three Centers are the facilities directly funded and managed by the Tokyo Metropolitan Government.

4. Socio-economic Aspects of Ogasawara Islands

Based upon the Law for Special Measures of Development Promotion of Ogasawara Islands in 1969, the New Development Plan of Ogasawara Islands in 1999 is aiming at industrial development and preparation of social bases in making use of natural characteristics and growth potentialities of the Islands³⁾. The Plan expected population of the Islands approximately 2,500.

Population of the year 2000 is 1,981 in Chichijima, 453 in Hahajima and totally 2,434 very close to the expected population by the Plan. Population percentage of more than 65 years old in the Islands reached 9.9%, this figure is rather small compared to other region or 17.2%, general average of Japan in 2000 since younger and production aged generation has immigrated still in Ogasawara Islands. However the United Nations identifies the society of old age, if population percentage of more than 65 years old reached 7%. Maximum population of 7,462 in Ogasawara Islands was recorded in 1940 due mainly to immigration from main land for fisheries and whaling.

Ogasawara Islands were firstly found and named by Mr. Sadayori Ogasawara, grandson of the lord of Matsumoto in 1593, but first inhabitants around 20 were Hawaiian aborigine emigrated from Hawaii to Chichijima Island for the purposes of fisheries and whaling in 1830, and all of their descendants were naturalized as Japanese citizens in 1882. The first Japanese 38 immigrants from Hachijo Island arrived in Chichijima Island in 1862. In reflecting the above history of pioneering

settlers, male population has consistently been dominated over female population, and even in the year 2000 male is 372 persons larger than female population even though the industrial structure in the Islands has been shifting from primary to tertiary industry with ecotourism-oriented economy, in other words from “whaling to whale-watching economy”.

Table 3 Demographic Trends of Ogasawara Islands

Year	Male	Female	TOTAL
1968	196	89	285
1970	310	98	408
1975	854	502	1,356
1980	965	630	1,595
1985	1,072	706	1,778
1990	1,134	785	1,919
1995	1,331	926	2,257
1999	1,378	988	2,366
2000	1,403	1,031	2,434

Note : Summed up the data from National Census

With regard to employees number, since the primary industry employs 8%, the secondary industry dominated by construction employs 21%, and the tertiary industry including services, public business, wholesale and retailing, and restaurant employs 71%, rural island industry nowadays heavily depends upon the tertiary industry and also upon the public undertakings like construction as well.

Table 4 Trends of Primary, Secondary and Tertiary Industry Employees (persons)

Year	Primary Industry	Secondary I.	Tertiary I.	TOTAL
1990	156 10%	286 18%	1,141 72%	1,583
1995	169 8%	416 21%	1,406 71%	1,991

Note : Summed up the data from National Census

Among the village revenue of 3.5 billion Japanese yen, local subsidies from the central government and from the Tokyo Metropolitan Government, and expenditures by the central government and by the Tokyo Metropolitan Government

account for 62% which depend largely upon the outside fund of the Islands. Issuance of village loan accounts for 11% and tax revenue accounts for only 19% of village's annual revenue.

Table 5 Local Financial Conditions by Revenues in fiscal 1999 (million¥)

Autonomous source like local tax, property income, etc.	Subsidy and expenditure from central & metropolitan gov.	Local loans for creditors	Other revenues like carry-over	Total
679 19%	2,184 62%	381 11%	293 8%	3,537 100%

Note 1 : Summed up the data based upon Ogasawara Data Book. 2000⁹⁾

2 : Autonomous sources include local municipality tax, allotment, commission fee, property income, and contribution.

3 : Subsidy and expenditure include local subsidy, local transfer, subsidy from consumption tax, subsidy from automobile acquisition tax, and other special subsidies and expenditures from central and prefecture level governments.

4 : Local loans are to be issued by the local municipality government.

5 : Other revenues include carry-over and other miscellaneous incomes.

Lastly annual visitor number is between 26,000 and 30,000 recently, which approximately 70% is with tourism purposes. More than 80% visitors use regular ply vessel Ogasawara-maru of Ogasawara Marine Transportation Co. Ltd. and rest visit by touring ships. Visitor number is less than a half of that of the Galapagos Islands, nearly 65,000 travelers visited in 1998. A total number of visitors to stay overnight at lodging accommodations is between 80,000 and 85,000 annually. Average nights to stay at lodging accommodations per a tourist are 3, and totally 6,000 tourists stay at Ogasawara-maru.

Table 6 Recent Trends of Visitors and Tourists to Ogasawara Islands

	1994	1995	1996	1997	1998
Tourists by Regular Ply Vessel	15,802	14,065	15,337	15,656	16,836
Non-tourists by RPV.	7,456	7,735	8,542	8,908	9,259
Tourists by Touring Vessel	3,454	5,379	5,399	4,600	2,383
Total Visitors	26,712	27,179	29,278	29,164	28,478
Total Tourists	19,256 72%	19,444 72%	20,736 71%	20,256 69%	19,219 67%

Note 1 : Summed up the data based upon Ogasawara Data Book. 2000⁹⁾

2 : Percentages of total tourists are for total visitors

Galapagos ; Approximately 16,000 population receive totally 65,000 tourists annually.

In viewing the thriving ecotourism in Galapagos, amended Special Law for Galapagos in 1998, banned migration from mainland to Galapagos since that year, and ordered guides and tourism entrepreneurs other than Ecuadorians out of Galapagos Island.

In order to eradicate invasive alien species like Akagi (*Bischofia javanica* BL.) by taking the bark off, Tokyo Forestry Office, Ministry of Agriculture, Forestry and Fisheries started in summer 2002 to invite 6 days volunteer tour of Akagi eradication with optional ecotour to primeval forest, battle sites, Minamijima cruising, fishing and/or diving, etc¹⁰⁾.

5. Issue of Airport Construction in Ogasawara Islands

There exists very strong demand for airport construction in Ogasawara Islands by local inhabitants for the reasons of medical affairs of emergency and tourism promotion by increasing number of visitors as well. At the same time, NPO/NGOs groups and other environmentalists in and outside of the Islands have strong opposition against any plan of airport construction in Ogasawara Islands for the reason of protecting the indigenous ecosystems of Galapagos of the Orient through maintaining of rather inconvenient transportation system.

From the inception of designation of Ogasawara National Park in 1972, the National Park Plan of Ogasawara set aside central wide area of Anijima Island as Ordinary Zone, buffer zone in a sense, for rather easy to erect large-scale constructions like airport since its planning stage⁴⁾. Since the scientific research team of fauna and flora at a later stage, revealed that this central wide area had richness of indigenous animals and plants species in rare ecology of dry shrubs in Japan, the plan of airport construction on this site was almost abandoned in early 1990s.

Central plateau of Chichijima Island was then proposed as an alternative site for the airport by local inhabitants that however caused again a large dispute among propulsion groups and opposition groups, since the site included Special Zones of National Park where indigenous species like Munin-Azalea and Munin-Nobotan (*Melastomataceae*) were surviving. After the field visit of Ogasawara in summer 2001, the Governor of Tokyo Metropolitan Government expressed rather negative comments on airport construction on the central plateau of Chichijima Island and he mentioned also the 3rd candidate site with floating aerodrome making use of abandoned military used airport during the period of 2nd World War.

However since the 3rd candidate site may also cause environmental effects on precious corals of Chichijima Island, arguments by several stake-holders on airport construction site has still been very controversial. In the meantime, Ogasawara Marine Transportation Co. Ltd. plans to introduce super-speed vessel — Techno-Super-Liner (TSL), saving one-third of navigation hours in very near future, fiscal 2005 which may perhaps entail positive effects on ecosystems sustainability, economy and social structure of Ogasawara Islands.

Galapagos has an airport and aviation services mainly between Quito, the capital of Ecuador. Nowadays in compliance with the Special Law for Galapagos, National Park Office levies US\$ 80 as an entrance fee per a person when international visitors arrive at the airport, and us\$ 6 for domestic tourist.

6. Efforts on Adaptation of Ecotourism in Ogasawara Islands

Minamijima Island with area of 28ha. and unique submerged karst geomorphology located 1km south-west of Chichijima Island is uninhabited and designated as the Special Protection Zone of Ogasawara National Park. Same-Ike (Shark-pond) is a small bay connecting with ocean outside after collapsing a part of subsidence formed pond from where increasing number of tourists lands and walks along doline and karren of unique karst geomorphology.

In viewing the importance of nature of the Minmijima Island, Tokyo Metropolitan Government in cooperation with Ministry of the Environment and Ogasawara Village authority plans to start vegetation restoration project and to designate nature conservation promotion zone in entire area of Minamijima Island and in Sekimon area of Hahajima Island as well. Through sending study teams to Galapagos National Park in Ecuador several times, Tokyo Metropolitan Government has a plan of introducing ecotourism especially in Minamijima Island with interpretive guides who should be qualified by lecture classes for interpretation.

Prior to firm introduction of interpretive guides institutionally¹⁾¹¹⁾¹³⁾, Ogasawara Village authority has been operating Voluntary Rules for Conservation and Making Good Use of Minamijima Island since 2001⁸⁾, details of which are as follows.

(A) For Tour Guiding Operators, member of the Tourism Association ;

1) Not entering the area other than nature trails in order to minimize effects

of landing,

- 2) Landing with guides accompanied,
- 3) Landing period should be limited to less than 2 hours,
- 4) Removing seeds and mud from clothing and shoes when landing in,
- 5) In order to restore natural vegetation, maximum 15 tourists per a landing group, and maximum 100 tourists per a day should strictly be fulfilled,
- 6) In order to restore natural vegetation, 3 months a year are to be kept for recuperation period when tourists voluntarily refrain from landing, and
- 7) Report the number of tourists to the Tourism Association immediately after landing in Minamijima Island.

(B) For general villagers ;

- 1) Any villagers who will plan to land in Minamijima Island not through Tour Guiding Operators, should follow the necessary procedures for landing to the Industry & Tourism Division of Ogasawara Village Office at least one day before their landing in.
- 2) Items 1), 3), 4) and 6) for Tour Guiding Operators, member of the Tourism Association are also applicable to general villagers who will plan to land in Minamijima Island.

In Galapagos, Eighty Cruising Vessels have licenses for visiting Galapagos which are obliged to let Naturalist Guides on board.

Visitors are required to stay overnights in vessels in principle. In compliance with the rules in 1999, a small group not more than 16 visitors are allowed to land Zona de Visitantes by boat with at least one qualified Naturalist Guide as an interpreter of nature, fauna & flora and supervisor of their behaviors on land.

At present almost 200 Naturalist Guides are licensed for working at least 120 days a year per a person as Guides who passed qualifying examination after one month lecture class organized by the Darwin Institute. Naturalist Guides are also required to speak Spanish and to communicate fluently in other European languages like English, French and/or German as well⁵⁾.

In learning from Galapagos National Park, the Tokyo Metropolitan Government has a draft plan of introducing institutional system of interpretive guides for Minamijima Island and Sekimon area of Hahajima Island which will include following items.

- (1) Visitors Education ; Through introducing appropriate interpretive activities on fauna and flora especially, let visitors to notify the valuables and attrac-

tions of Ogasawara, and to bring about visitors conservation awareness which may finally entail to produce repeating visitors to Ogasawara Islands.

- (2) Guides Training ; Training and qualifying interpretive guides by lecture classes of nature, guiding skills as well as of risk management and survival practices, etc.
- (3) Villagers Lecturing ; Lecture classes for local villagers to issue qualifications will be conducted during the off-season of October to November, and follow-up lectures are also planned and executed continuously.

7. Conclusions

Ogasawara Islands, with relatively small area, population and visitors' number, possess characteristics as the Galapagos of the Orient where relatively well-managed as the islands of National Park in coordination between conservation and utilization of natural resources in Japan with some exception of introduction of alien invasive species of flora in order to self-sufficing of fuel woods in early 20th century.

Under the difficulty of dispatching of national park rangers directly from the Ministry of the Environment, Tokyo Metropolitan Government as the competent authority of solitary islands has been taking the major role of management of Ogasawara National Park as well. And population reached recently almost its planning level of 2,500 under the New Development Plan of Ogasawara Islands which must be considered as an appropriate population level for Ogasawara Islands.

The Islands is one of the original sites for ecotourism in Japan including the establishment of Whale-watching Association there. Guide and Control system which provides environmental education to visitors, guides and villagers is being introduced mainly by Tokyo Metropolitan Government in collaboration with Ogasawara Village in learnt from the Galapagos. In terms of access to the Islands, introduction of super-speed vessel shall entail positive effects on both of ecosystems and society of Ogasawara Islands in the near future.

Future major tasks must be to transfer ecologically important areas in the Islands to the Ministry of the Environment and/or Tokyo Metropolitan Government, and to dispatch national park rangers or managers in addition to already sent management staff from Tokyo Metropolitan Government.

References ;

- 1) Boo, Elizabeth. 1991a. Planning for Ecotourism : PARKS Magazine Vol.2. No.3, IUCN (E)
- 2) Boo, E. 1991b. Ecotourism – The Potentials and Pitfalls : Vol.1 & 2, World Wildlife Fund (E)
- 3) Government of Japan. 1969 The Law for Special Measures of Development Promotion of Ogasawara Islands
- 4) Government of Japan. 1972. National Park Plan of Ogasawara : Environment Agency
- 5) Itho, Shuzo. 1992. Ecotourism in Galapagos N.P. : National Parks No.501, pp.8-13
- 6) IUCN/WWF. 2000. Indigenous and Traditional Peoples and Protected Areas : pp.261, IUCN (E)
- 7) Ministry of the Environment. 1995. Nature Conservation in Japan : pp.58 (E)
- 8) Miyazawa, Shoichi, Mayor. 2001. Voluntary Rules for Conservation of Minamijima : Ogasawara Village
- 9) Ogasawara Village. 2000. Ogasawara Data Book, pp.30
- 10) Tokyo Forestry Office. 2001. Present State and Problems of National Forest in Ogasawara : pp.58
- 11) UNEP/TIES. 2002. Ecotourism Principles, Practices & Policies for Sustainability : pp.66, UNEP/DTIE (E)
- 12) UNEP/UNESCO/WTO. 2003. Sustainable Tourism, The Tour Operator's Contribution : pp. 96, UNEP/DTIE (E)
- 13) Usuki, M. 1992. Japanese Translation of 1) Planning for Ecotourism with IUCN consent : National Parks No.501, pp.2-7, National Parks Association of Japan
- 14) Usuki, M. 2002. Tourism Resources : Global Environment Handbook, pp.123-128, Asakura Shoten
- 15) Usuki, M. 2004a. Environmental Education and Ecotourism for Conservation towards Sustainability of Local Communities : Journal of Tourism Studies Vol.3, pp.117-131, Faculty of Regional Development Studies, Toyo University (E)
- 16) Usuki, M. 2004b. Present State and Perspectives on National Parks and Protected Areas in South-East Asian Region : TROPICS Vol.13 (3), pp.221-232, The Japan Society of Tropical Ecology (E)

Note :

References marked with (E) are written in English and the other references are written in Japanese whose titles were temporarily translated by the author.